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THE LOTUS.

[The Egyptian Lotus.]

THERE have perhaps been few botanic names so variously applied as that of *lotus;* nor are there many plants of which so much has been written. The Greeks and Romans seem to have mentioned so many different plants by the name, that it is not always easy to make out which of the number they are on any particular occasion describing. The name comes to us in Greek characters, and hence some persons have taken the trouble to try to find a meaning for it in that language, without considering that Herodotus, who himself calls it a species of lily, say that *lotos* is the Egyptian name (ii. chap. 92). When Herodotus speaks of the *tree* lotus, he calls it the Cyrenæan Lotus (ii. 96). With regard to its extended application, the truth seems to be that at various times, and in various languages and nations, it has been applied to some plant of eminent use to man. The first mention of the name is by Homer, who speaks of a mild hospitable race of men whom he calls *Lotophagi* (lotus-eaters), because they entirely subsisted on the berry of the lotus, which had the power of making strangers who ate it forget their native country and distant friends. This plant is now generally considered to be the *rhamnus lotus* of Linnæus, which is a thorny shrub growing on the northern coast of Africa, and elsewhere on that continent, and producing a farinaceous berry about the size of an olive; which, being pounded in a wooden vessel and afterwards dried in the sun, is made into sweet cakes, in colour and flavour resembling gingerbread. The natives of the countries through which Mungo Park travelled esteem it highly, and in some places they prepare from it a sweet beverage.

The name of *lotus* has also been given to the *cyamus*, or sacred bean of India. In the ancient Hindoo system this aquatic plant was the attribute of Ganga, the goddess of the Ganges; and, more generally, was an emblem of the great re-productive powers of the world, on which account it was held in religious veneration. The following account of the matter from the 'Sheeve Purana,' one of the sacred books of the Hindoos, may amuse our readers, though it may not afford them much edification. Bramah, one of the chief deities, is made to give this account of his origin. When Vishnu was about to create the world, he produced a lotus several thousand miles long, from the unfolded flower of which proceeded Bramah. He reflected, with much amazement, who he was and whence he came, and at last concluded that the lotus-flower was his author. He therefore travelled downward a hundred years in hope to reach the root; but, seeing no end of his journey, he turned about, and travelled upward another century without reaching the end of this immense plant. At last Vishnu was seen, and, a quarrel ensuing, the two gods were going to fight, when Siva appeared and prevented the combat. Vishnu then, in the shape of a boar, travelled down the lotus a thousand years till he came to Patal; and Bramah wandered upwards, in the form of a goose, until he

came to the world above. This fable not only accounts for the origin of the veneration paid to the lotus in India, but affords a fair average specimen of the Hindoo mythological system. Some writers have thought that Pythagoras, who is said to have travelled in India, referred to this plant when he commanded his followers to abstain from beans; and that, as the cyamus did not grow in Greece, he adopted the common bean as its representative.

The Egyptian lotus is mentioned in the following terms by the ancient Greek writers, Herodotus and Theophrastus. The former says—"The Egyptians, who live in the marshy grounds, make use of the following expedient to procure themselves more easily the means of subsistence. When the waters have risen to their extreme height, and all their fields are overflowed, there appears above the surface an immense quantity of plants of the lily species, which the Egyptians call the Lotos, and which they cut down and dry in the sun. The seed of the flower, which resembles that of the poppy, they bake, and make into a kind of bread; they also eat the root of this plant, which is round, of an agreeable flavour, and about the size of an apple." The same plant is thus described by Theophrastus:—"The lotus of Egypt grows in the inundated fields. Its flowers are white, and their petals are like those of the lily. They grow close to one another in great numbers. The flowers close at the setting of the sun, and sink below the water; but, when the sun rises, they again open and re-appear. This they do daily until the fruit is completely formed and the flower has fallen. The fruit is equal to that of a large poppy, and contains a large number of grains resembling those of millet." It is singular that neither of these ancient authors ascribe a sacred character to the plant, but we learn from later sources that it denoted fertility in Egypt as in India, being consecrated to Isis and Osiris as an emblem of the creation of the world from water; and that it was also considered emblematic of the rising of the Nile and the return of the sun. This account is confirmed by the frequency of its occurrence in the bas-reliefs and paintings in the Egyptian temples, in all representations of sacrifices, religious ceremonies, &c., and in tombs, and whatever is connected with death and another life. One class of writers, in their anxiety to show that the religion and arts of Egypt were derived from India, were formerly disposed to contend that the true lotus described by Herodotus and Theophrastus was the Indian cyamus, which had been introduced into Egypt, together with the superstitions connected with it, but had since become quite extinct in that country; and this position they confirmed, by asserting that the lotus represented in the Egyptian sculptures was not the Egyptian *nymphæa*, but the Indian *cyamus*. But it will be perceived that these old Greek writers refer to the plant which they describe as one which is common; and M. Delille states in the great work, the 'Description de l'Egypte,' that the Egyptian lotus agrees as nearly as could be expected with the description of Herodotus and Theophrastus; and that the *Nymphæa cærulea*, or blue lotus of Egypt, is that which is more frequently than *any other* plant sculptured and painted in the Egyptian temples.

Our wood-cut represents the Egyptian lotus (*Nymphæa lotus*), and the blue lotus (*Nymphæa cærulea*), grouped from the work we have just mentioned, from which we also obtain the following description of the white species, from which the other is chiefly distinguished by the blue colour of its flower. "It grows in the ditches and canals of Lower Egypt, and varies in size according to the depth of the water. The root is nearly a globular tubercle, about fifteen lines thick, (more than an inch and a quarter,) and covered with a dry, brown, and leathery skin. The leaf-stalks are cylindrical, about as large as the little finger, and garnished with five prickles: the length is proportionable to the depth of the water; short in rice-fields, and low, marshy places, but sometimes five feet long in the lakes and canals. The leaf, which approaches to a circular shape, with short semi-lunar indentations around the circumference, varies from six inches to a foot in breadth. The calyx consists of four oval leaves; green below, but ruddy at the edges. The blossom consists of from sixteen to twenty petals, which only differ from the leaves of the calyx in being of a white colour, and a little longer in shape. The centre of the flower is occupied by a half-globular ovary, to which adhere the leaves of the calyx, and the petals disposed in several ranks. The stamens, which are more numerous than the petals, are inserted in the same manner around the ovary; they are straight and half as long as the petals, those nearest to the petals being the largest. The ovary is crowned by a flat stigma, divided into twenty or thirty rays. The fruit is round, hollow, soft, and pulpy, and covered with scales, which are the remains of the different parts of the flower. The divisions of this capsule correspond in number with the rays of the stigma, and form so many cells, each of which contains a large number of small, round, and mealy seeds."

At the present day, the Egyptians make little use of either the white or blue species of the lotus. They esteem the latter most on account of its beautiful flower, which the ancient Egyptians used to make into crowns. The local name for both is *naufar*; and the white is distinguished as the "naufar of the hogs," and the blue as the "naufar of the Arabs."

We cannot better conclude this article than by the following beautiful passage from Southey's 'Curse of Kehama,' descriptive of a lake adorned by the lotus:—

"Fed by perpetual springs, a small lagoon,
Pellucid, deep, and still, in silence join'd
And swell'd the passing stream. Like burnish'd steel,
Glowing, it lay beneath the eye of noon;
And when the breezes, in their play,
Ruffled the darkening surface, then, with gleam
Of sudden light, around the lotus stem
It rippled, and the sacred flowers that crown
The lakelet with their roseate beauty, ride,
In gentlest waving rock'd from side to side;
And as the wind upheaves
Their broad and buoyant weight, the glossy leaves
Flap on the twinkling waters up and down."

STATISTICS OF PARIS.

Two of the Appendices (Nos. 75 and 76) of the recently published 'Report on the Commercial Relations between France and Great Britain,' contain some very interesting information concerning the annual expenditure of the city of Paris, framed according to information which relates chiefly to the year 1826. We have reduced the francs to sterling money for the convenience of our readers; and, to render the article more complete, we have, from other sources, but equally drawn from official documents, prefixed the statistics of population and some other details, all of which refer to the same year, the estimated expenditure of which will be then given from the Report. We have occasionally stated the grounds on which the particular estimates are formed; and may generally mention that, from the great attention which has been given to statistics at Paris, the returns from thence claim the utmost reliance. It is our earnest hope that the sense which begins to be entertained in this country of the importance and value of statistical facts will ere long produce similar information of equal accuracy concerning our own metropolis and the country at large; and that we shall not much longer be obliged to confer

ourselves with uncertain guesses and *possible* approximations.

The City.—Twenty-eight highways (routes royales) conduct to the capital, in which there are 1098 streets; 33 cross-ways; 134 passages; 27 alleys; 119 alleys, not thoroughfares; 22 courts; 7 closes; 10 piazzas (cloîtres); 22 bouvelards; 75 squares; 47 markets; 60 barriers; 49 quays; 8 wharfs; and 26,862 houses.

Population.—The last census, previously to 1826, was in 1817. According to the calculation of the births and deaths between that period and 1826, the capital, in the latter year, contained 890,905 inhabitants *, being 176,939 more than when the census was taken. These numbers include 474 inmates of the hospitals, who belong to the suburbs or departments; but it applies solely to the inhabitants properly so called, independently of strangers, not domiciliated, and troops, which are continually varying. The number of births in Paris, in 1826, was 29,970; marriages, 7755; deaths, 25,341. Of the 29,970 children born, 10,502 were illegitimate; of whom 3366 were acknowledged by their fathers. Of the 25,341 deaths, 15,647 persons died at their own houses; 8669 in the hospitals; 643 in the military hospitals; 50 in the prisons; and the number of bodies deposited in the course of the year at the *Morgue* †, was 332. The number of accidental and violent deaths was 859, (636 male and 223 female,) including 357 suicides, 8 murdered, 2 executed. The number of suicides, attempted and accomplished, was 511, composed of 333 men and 178 women. The number of deaths by the small-pox was 240; and the number of children gratuitously vaccinated was 3047.

Occupations.—Of the 890,905 inhabitants of Paris, in 1826, 430 were high functionaries; 450 members of the judicial department; 1140 members of the Institute and of the University; 18,460 clerks; 47,000 students and scholars; 366,000 persons living on their income, or engaged in manufactures or trades; 348,000 workmen or labourers; 90,000 servants; 77,220 paupers; 13,700 sick, infirm, and aged, in the hospitals; 19,858 foundlings; nearly 300 persons belonging to the police; 400 advocates; 114 notaries; 150 attorneys; 200 bailiffs; 150 lottery-clerks; 300 actors and actresses; 200 dancers, singers, &c.; 310 musicians; 1200 dancing-masters, music-masters, &c.; 1000 physicians, surgeons, and apothecaries; 500 painters and sculptors; 600 printers and engravers; 1257 priests and nuns; 47,000 widows; 74 bankers; 1671 clerks, &c., of the Post-office; 500 commercial agents, &c.; 38,000 shopkeepers; 12,000 door porters; 500 drivers of diligences and mail-coaches; and 4000 prisoners.

Expenditure.—Now proceeding to the Report, we find the expenditure of this great body of people stated as follows:—The taxes and other general expenses, common to all the inhabitants, amounts to 4,714,651*l.*; or 5*l.* 7*s.* 8*d.* for each person. The items which constitute this large sum are not mentioned in the Report, but in 'Galignani's New Paris Guide' the following statement is supplied with a reference to the same year, and from manifestly the same official sources which the compilers of the Report employed. Registers, domains, stamps, and mortgages, 977,073*l.*; indirect taxes, 981,206*l.*; direct taxes, 941,249*l.*; postage, 231,154*l.*; lotteries, 328,027*l.*; customs, (salt not included,) 17,786*l.*; authorized gaming-houses, 435,416*l.*; proceedings in criminal cases, 9895*l.*; *escorte* (?) 3246*l.*; verification of weights and measures, 10,913*l.*; seal duty, 7914*l.*; interest of securities, 31,666*l.*; drawback on salaries, 117,071*l.*; substitutes for recruits, 8629*l.*; patents, 9430*l.*; funeral ceremonies, and chairs in churches, 39,583*l.*; interments, 39,583*l.*; university expenses, 31,666*l.*; one-tenth of the expense of the Royal Printing-office, 9895*l.*; profit of the Bank of France, 268,958*l.*; seizures at the barriers, 3166*l.*; city budget, 197,916*l.*; total, under the head of taxes, &c., as given above, 4,714,651*l.*

We now return to the Report, and derive from it all our subsequent information on the subject of expenditure. *Rent*, 3,166,666*l.*; or 72*s.* for each inhabitant. *Annual maintenance and repairs of houses*, 791,666*l.*; or 18*s.* for each person. *Food*, 12,221,150*l.*; or 13*l.* 19*s.* for each. The several items of expense under this principal and interesting head are enumerated in the Appendix, No. 76, from which we are glad to obtain the ensuing details. *Corn.* The expenditure on food made from corn amounts to 19 per cent. of the whole expenditure on food; and consists of bread, 2,091,476*l.*, or 46*s.* 5*d.* for each person; flour, various uses, pastry, &c., 144,666*l.*, or 3*s.* 4*d.* for each; maccaroni, fecula, grits, &c., 72,833*l.*, or 1*s.* 8*d.* for each. *Meat of all kinds*, 22 per cent. of the whole, being 2,712,567*l.*, or 62*s.* for each person. *Poultry and Game*, 3 per cent. of the whole; being 363,635*l.*, or 8*s.* 4*d.* for each inhabitant. *Fish*, also 3 per cent. of the whole; being, for river or fresh-water fish, 24,342*l.*, or 6½*d.* for each person. Oysters, and other shell-fish, 36,535*l.*, or 10*d.* for each; fresh sea fish, 176,284*l.*, or 4*s.* for each; salted sea fish, estimated at half the fresh sea fish, 88,142*l.*, or 2*s.* for each. *Eggs*, and the various forms of *Milk*:—7 per cent. of the whole expense for food, thus distributed; fresh and melted butter, 378,535*l.*, or 8*s.* 8*d.* for each inhabitant; eggs, 189,049*l.*, or 4*s.* 3½*d.* for each person; milk, whey, cream, and new cheese, 339,071*l.*, or 7*s.* 9*d.* for each person. *Vegetables and Fruit*, fresh and dried, estimated at one-fifth of the meat, 542,512*l.*, or 12*s.* 5*d.* for each inhabitant, being 5 per cent. of the whole expenditure for food. *Various Articles*, together amounting to 2 per cent. of the whole expense, thus:—Salt, 71,922*l.*, or 1*s.* 7½*d.* for each inhabitant; dry cheese, 68,280*l.*, or 1*s.* 6½*d.* for each; olive oil, 71,250*l.*, or 1*s.* 7½*d.* for each; vinegar, 59,375*l.*, or 1*s.* 4*d.* for each. *Liquors*:—these form 27 per cent. of the whole expenditure for food, and are thus described:—brandy and cordials, 435,416*l.*, or 9*s.* 10*d.* for each inhabitant; wine, 2,704,611*l.*, or 61*s.* 6*d.* for each; cider and perry, 10,885*l.*, or 3*d.* for each; beer, barley, and hops, 201,875*l.*, or 4*s.* 10½*d.* for each inhabitant. *Colonial Produce*:—the expenditure on this class of articles amounts to 11 per cent. of the whole. The following are the details:—Sugar, and its various applications, 865,885*l.*, or 19*s.* 9½*d.* for each inhabitant. Coffee, 346,353*l.*, or 7*s.* 11*d.* for each; tea and cocoa, estimated at one-tenth of the coffee, 34,635*l.*, or 9½*d.* for each; spices, honey, &c., estimated at one-tenth of the sugar, 86,588*l.*, or 2*s.* for each person. *Water*, one per cent. of the whole; being 164,192*l.*, or 3*s.* 9*d.* for each inhabitant. The total of these various sums expended on articles of food is as before given from Appendix No. 75, to which we now return.

The expenditure on *Clothing* is estimated at one-fifth of that on food, and amounts to 2,444,230*l.*, or 55*s.* 4*d.* for each inhabitant. *Fuel*, 1,674,375*l.*, or 38*s.* 3*d.* each. *Lighting*, calculated according to the entries of oil, tallow, wax, candles, and the cost of 9000 tubes of gas at 62*s.* each, 689,580*l.*, or 15*s.* 8*d.* for one person. *Washing*, 1,246,875*l.*, being 28*s.* 6*d.* for each person. *Furniture*, renewals and repairs, estimating the annual expenses at one-fifth of the value of the furniture, 2,355,900*l.*, or 53*s.* 10*d.* for each inhabitant. *Servants and Salaries*:—this item estimates that there are 40,000 male and 50,000 female servants of all kinds; 4000 male and 6000 female assistants, scrubbers, sick nurses, &c.; and 15,000 sempstresses; total 115,000, at

* At a later period, in 1829, the population of Paris was estimated at 1,013,000.

† A place where persons found dead are deposited to be owned by their friends.

13*l.* 19*s.* average yearly wages or salary, making altogether 1,593,227*l.*, or 36*s.* 5*d.* for each inhabitant. *Horses*:—this head of expense includes the following items:—food, 827,291*l.*; renewal and purchase of 4500 horses, at 23*l.* 15*s.* each, 106,875*l.*; shoeing and medicine for 21,000 horses, at 72*s.* 8*d.* each, 77,347*l.*: total of annual expenditure on horses, 1,010,641*l.*, or 23*s.* 3*d.* for each inhabitant. *Carriages and Harness*, maintenance and renewal:—this head of expense is distributed thus:—6000 carts and drays, at 5*l.* 18*s.* 9*d.* each, 35,625*l.*; 2500 private carriages, at 19*l.* 15*s.* 10*d.* each, 44,531*l.*; 5000 cabriolets, &c., at 7*l.* 8*s.* 4*d.* each, 39,583*l.*: total expenditure on carriages, &c., 119,739*l.*, or 2*s.* 6*d.* for one inhabitant. *Cost of Conveyance within Paris*: estimated, by the gains of 1100 hackney coaches, at 9*s.* 6*d.* a day, 190,712*l.*; the gains of 1000 cabriolets, at 7*s.* 1½*d.* a day, 130,031*l.*; and the gains of 400 glass coaches, at 197*l.* 18*s.* 4*d.* a year, 79,167*l.*; total cost of interior conveyance, 399,910*l.*, or 9*s.* 1½*d.* for each inhabitant. *Tobacco and Snuff*, 225,623*l.*, or 5*s.* 1½*d.* for each person. *Baths*, estimated at two river baths and two warm baths per inhabitant, 110,843*l.*, or 2*s.* 8½*d.* for each person. *Charities in general*, estimated by the expenses of hospitals and asylums, 395,833*l.*, or 9*s.* for each inhabitant. *Presents*, calculated at 4*s.* per family, average for 30,000 families, 59,375*l.*, or 1*s.* 6*d.* for each inhabitant. *Theatres and Exhibitions*, estimated according to the tax levied upon the produce for the benefit of the poor, 245,417*l.*, or 5*s.* 7½*d.* for each inhabitant. *Lyings-in Charges*. The births being reckoned at 29,000 yearly, the lyings-in are thus classified:—6500 are at hospitals, or by assistance rendered at residences; the expenses of the remainder are thus estimated:—7500 at about 12*s.* each, 4,453*l.*; 10,000*l.* at 31*s.* 8*d.* each, 15,832*l.*; and 5000 at 57*s.* each, 14,250*l.*; total expenditure on lyings-in, 34,536*l.*; or 9½*d.* to each inhabitant. *Nursings*. Of the 29,000 children born in the year, it is estimated that 5000 are nursed at the charge of the asylums; 9000 at a cost of about 80*s.*, and 12,000 at 7*l.* 18*s.* 4*d.*; which, leaving out of account 3000 children successively dead, makes a total of 130,264*l.* on this head of charge; or 2*s.* 11*d.* for each inhabitant. *Medical Aid*. It is estimated that 74,000 persons, or one-twelfth of the population, are sick at the expense of 2½*d.* a day for drugs and medicines, making 267,180*l.* in the year, with a further sum of 133,590*l.*, estimated at one-half of the price of the medicines, paid in fees to physicians and surgeons: total expenses for medical assistance, 400,782*l.*, or 9*s.* for each inhabitant. *Newspapers, &c.*, cost of subscription:—30,000 subscribers to the daily papers, at 55*s.* 5*d.* each, 83,125*l.*; subscriptions to reading-rooms, and to domestic and foreign periodicals, 35,625*l.*; total 118,750*l.*, or 2*s.* 8½*d.* for each inhabitant. Thus the total amount of the annual expenditure of the city of Paris, on the objects of expense which have been enumerated, in the year to which the statement refers, was 35,388,774*l.*; which gives 40*l.* 8*s.* as the average annual expenditure of each inhabitant.

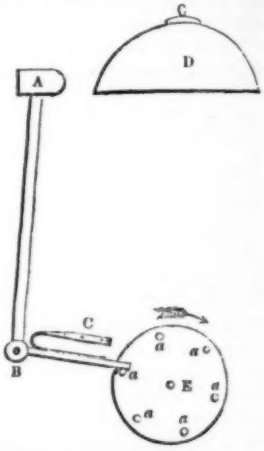
Patronage.—The Sciences, after a thousand indignities, retired from the palace of Patronage, and having long wandered over the world in grief and distress, were led at last to the cottage of Independence, the daughter of Fortitude, where they were taught by Prudence and Parsimony to support themselves in dignity and quiet.—*Rambler, No. XCI.*

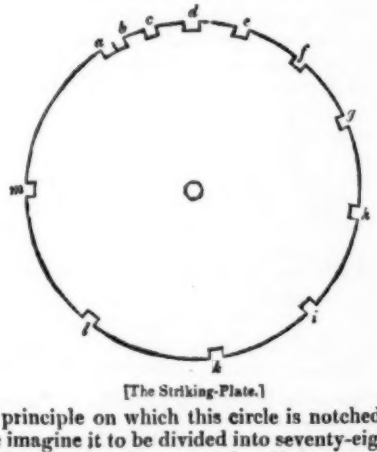
To solicit Patronage is, at least in the event, to set virtue to sale. None can be pleased without praise, and few can be praised without falsehood; few can be assiduous without servility, and none can be servile without corruption.—*Rambler, No. CIV.*

Chance is but a mere name, and really nothing in itself; a conception of our minds, and only a compendious way of speaking, whereby we would express, that such effects as are commonly attributed to *chance*, were verily produced by their true and proper causes, but without their design to produce them.—*Bentley.*

STRIKING MACHINERY OF CLOCKS.

THAT part of the mechanism of a clock which causes the hands to move round on the dial is slow but constant in its action, while that by which the striking is effected operates only at intervals, and then with a comparatively rapid motion. The moving powers of these parts must, therefore, be quite distinct from each other, though, at the moment of striking the hour, they have a temporary connexion. A weight or spring, with a cord wound round a barrel, is in this, as in the other part, the first mover: by a wheel with teeth fixed to this barrel, a whole train of wheels is set in motion, each wheel revolving more rapidly as it is more distant from the first mover. The last wheel,—which runs round perhaps fifty or sixty times in a second,—is prevented from too rapid a motion by a broad thin piece of brass fixed to it, called a fly or fan, which catches the air in its revolutions. Upon one of the wheels E, nearest the barrel, a number of pegs or pins (*a*) are fixed, which, when the wheel revolves, raise the tail of the hammer A B, and draw the hammer back from the bell D. As the wheel E (which is called the pin-wheel) continues to turn, the pin passes the hammer-tail, which is forced down again by the spring C, and in consequence the hammer returns and strikes the bell. In the figure, the wheel has six pins, and while it revolves once, the clock strikes six times. Thus far the clock is capable of striking; but, when wound up, it will continue to strike perhaps three or four hundred strokes until the weight comes to the ground. The question is now to make it strike but once an hour, and then only the number of strokes required. This is generally effected in foreign clocks, and sometimes in English ones, by a piece of mechanism called a striking-plate, which is a circle divided into unequal portions by notches on its circumference, as in the annexed figure.



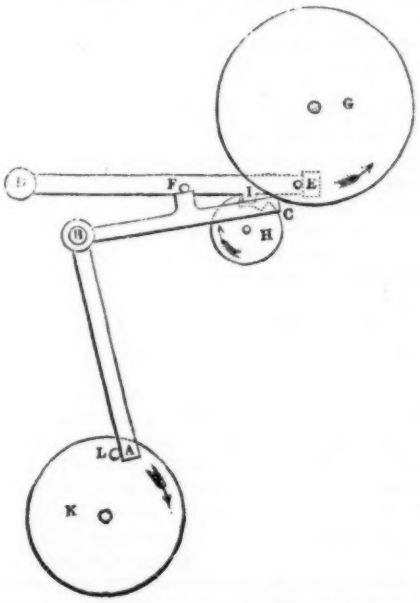


[The Striking-Plate.]

The principle on which this circle is notched is this:—if we imagine it to be divided into seventy-eight equal parts, the distance from *a* to *b* will be one of those

parts; from *b* to *c*, two; from *c* to *d*, three; and so on to twelve, making seventy-eight in all. The two first notches in the figure, as in practice, are blended together. This plate must be attached to a wheel with seventy-eight teeth, working in a pinion of six teeth, attached to the pin-wheel, by which combination, while the striking-plate advances $\frac{1}{78}$th of its circumference, as from *a* to *b*, the pin-wheel will advance one-sixth of its circumference, one peg will pass the hammer-tail, and the clock will strike one; while the plate goes from *b* to *c*, the clock will strike two, and so of all the rest. The object is then to make the striking-plate move on once an hour from notch to notch, and to remain motionless in the intervals. It has been seen that the tendency of the striking mechanism is to continue running rapidly until it is down. To prevent this continued motion, a little pin is fixed in one of the wheels, which runs round six or eight times each stroke; this pin rests against a small stud of metal, which keeps the clock still: if the stud be raised, the pin passes by, the clock strikes, and will continue to do so until the stud returns to its former place. In order to effect this removal, and return at the proper intervals, recourse is had to that part of the clock which is always going on.

The following figure will explain one mode, among many, of effecting this:—

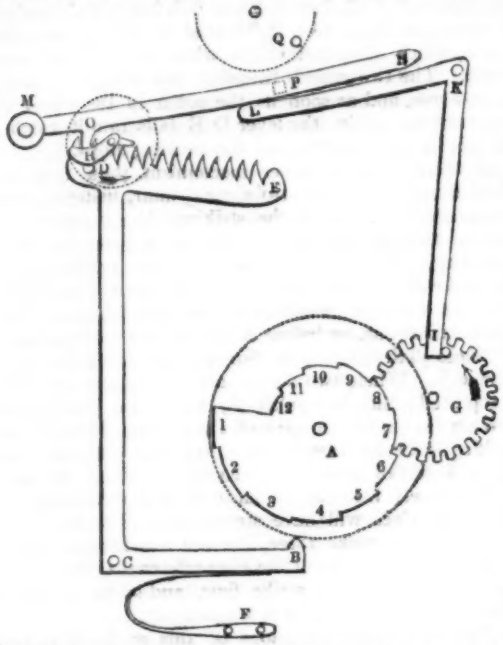


G is a wheel which runs round several times at each stroke of the clock; H another wheel which goes round once in the same time. The wheel H has a notch in its circumference, in which a pallet, I, fixed to a lever, D E, rests; so that the clock is kept from striking both by the pallet in this notch, and by the piece of metal E, behind the wheel G, (shown by dots in the figure) which holds the pin in the wheel. A B C is a bent lever, one end of which hangs down in front of the hour-wheel K, in which is fixed a pin, L, which every hour pushes forward the lever A, raises the end C, and with it the end E, of the lever D E, by the help of the pin F, fixed in it. The lifting up of this lever disengages, at the same moment, the two wheels G and H. The striking machinery begins to run, but only for a moment, as the pin, after a single turn of the wheel G, is caught upon the end of the lever B C, which is now raised; this produces a slight noise called the warning, which is heard a minute or two before the clock strikes. The actual striking does not take place until the peg L of the hour-wheel K has quite passed by the lever A, when immediately C falls down again. The lever D E, which was lifted by the rising of B C, does not now fall, because the pallet I rests upon the wheel H, instead of falling into the notch, which advanced a little when the warning was given. The two wheels therefore run round, the clock strikes one, and as soon as the notch in the wheel H comes round again, the lever D E falls into it, catches the pin in the wheel G, and the striking stops.

If there were no other mechanism than this, the clock would strike one stroke every hour, instead of the proper number. Here the striking-plate is called into action, though not inserted in the figure, to avoid crowding. Attached to the lever D E is a pallet which we will call M, resting in a notch of the striking-plate at *a*, for example, when it is just one o'clock. The clock strikes one, as before described, the striking-plate advances $\frac{1}{78}$th of its circumference, and the pallet M is now at *b*. When two o'clock arrives, the same process is repeated; but the pallet M, which was lifted up, is now resting upon that part of the circumference of the striking-plate between *b* and *c*, and will not allow the pallet I to fall into the notch of the wheel H, until it falls itself into the notch *c* of the striking-plate, when the clock will have struck two. The next hour the clock will strike three, because the distance from *c* to *d* is equal to $\frac{3}{78}$ths of the circumference of the plate; the next hour it will strike four, and so on to twelve, when the same routine will begin again.

There are many variations of this mode of action, but the principle is the same in all. The striking-plate is subject to a capital defect; it can only strike the hours in succession. If, for example, the clock stops at midnight, after having struck twelve, and is set on again at nine o'clock in the morning, and the hands be put on quickly, the clock will strike one instead of nine, two instead of ten, and will continue to strike wrong afterwards. It is usual in such cases to set on the clock: first to one o'clock, and wait until it has struck; ten to two, and wait again; then to three, four, until nine. To obviate the necessity of so tedious an operation, another piece of mechanism is generally used in England, and also in some foreign clocks, called the rack and snail, which is equally simple with the striking-plate, not more liable to be out of order, and which always strikes the hour pointed out by the hands. In this plan, a plate of brass, A, called, from its shape, the snail, is fixed to the hour-wheel, and turns with it. The snail is made on this principle: the circumference of the plate, out of which it was cut, is shown by the dotted line: this circumference is divided into twelve equal parts by lines drawn to the centre: where the snail is marked 1, a portion of the circumference is cut away to a certain depth; at 2, twice as much is cut away; at 3, three times as much; and in the same way to twelve. Close by the snail, but not touching it, is the rack B C D E, moveable on the pivot C, and pressed upwards by the spring F; it is, however, prevented from rising higher than the dotted line in the figure by a pallet, O, in the lever M N: but if the lever M N should be raised high enough to be quite out of the tooth of the rack, the spring would force the rack towards the left hand, until the point B reached the snail, and it would of course rise higher as more of the plate had been cut away. The teeth of the rack are so cut, that, when the snail is in the position shown in the figure, four teeth pass the pallet; if number 12 were in the same place, twelve teeth would pass, and so of any other number. The wheel-work is in this clock similar to that in which the striking-plate is used: on the wheel which turns once every stroke, a piece of metal, H, is fixed, called the gathering pallet, which runs round with it, in the direction of the arrow within the dotted circle. The

pallet is kept from turning by the pin D, but when the rack falls towards the left hand, it is left at liberty.



I K L is a bent lever, the end I of which is pressed once every hour by a pin in the wheel G, and at the same time the end L rises, lifts the lever N, liberates the rack, and allows the pallet H to run round. This makes the warning; but the clock does not strike immediately, because in some part of the lever M N there is fixed a stud of brass, P, which in rising falls into the way of the pin on the wheel Q, which runs round six or eight times every stroke; consequently, before the clock can strike, this obstacle must be removed. In a minute or two the wheel G will have so far advanced that the pin will pass the lever I, and, except the rack which has receded, all things will return to their former place. The clock is therefore free to strike. As the pallet H turns once with every stroke, its point catches one tooth of the rack, and brings it towards the right hand, where it is held by the click O until the next stroke, when it still farther advanced towards its original place. When all the teeth are gathered up, the peg D will prevent the pallet from turning farther, and the clock rests. In this manner, whether the clock be set forwards or backwards, the number struck will always be that denoted by the hour-hand,—if care be taken, in the first place, so to set the hand on its pivot, that the number pointed out may be that which corresponds with the portion of the snail presented to the lever B.

SALT-WATER LAKE IN INDIA.

THE following is the substance of an account of a salt-water lake in the heart of the Mahratta country, which was furnished to a correspondent by two of the Beyparrees, or merchants, who trade in the salt which it produces, and take it on bullocks to Mirzapore, a distance of 600 British miles. On account of the distance, the same persons only make their appearance at Mirzapore, in large bodies and with their families, every other year; and when overtaken by the rainy season, on their return, they form encampments and remain stationary.

"Samber ka Samoond," that is, the Sea of Samber, is estimated to be about sixteen miles square; and its depth gradually increases from the shore towards the centre, where it is about four or five fathoms. In the middle of this lake there rises an island of an entire solid rock, and about one-third of an acre in circumference, and thirty or forty yards high, by computation, above the surface of the water. In the middle of this rock there is a cleft or natural well of clear and perfectly fresh spring water, the surface of which is about twenty-five or thirty yards from the top of the rock, and which is supposed to be of an equal depth; yet the water of the lake itself is extremely salt. As near every natural curiosity a Brahmin or Fakeer establishes himself to receive the charitable donations of visiters, and sometimes a temple or oratory is erected in the vicinity, so, in the present instance, there is, on the summit of the rock, a small Hindoo temple, built of stone, to which both Moslems and Hindoos, who are concerned in the salt trade, resort to perform their devotions, maintaining that unless such duty were rendered, the produce of the lake would cease. The place is inhabited by a Brahmin. The lake is said to be only supplied in the rainy season by small rivulets, at other times dry, and by the drainings of the surrounding flat country. It has no apparent outlet, but is reduced by evaporation about two or three perpendicular feet every year. It is situated about 240 miles west of Seronge, half in the Jeypore and half in the Jadepore rajah's country; and the value of its produce, or the salt made at Samber, on the eastern side, is estimated at 30,000*l.* a year, which is divided between the two rajahs*. The following is the process by which the salt is obtained at this place.

When the lake has been replenished by the rains, the water is let into tanks from eighty to one hundred feet long, by twenty or thirty wide, with a depth of three or four feet. It is then left to evaporate until April or May, when the sediment is collected into cloths; and after the sand and earthy particles have been washed away with the lake water, the whole is thrown into one vast heap, which soon hardens to a rocky substance of such compact solidity, that the quantity which is not sold or taken away suffers little or no loss from exposure to the heavy rains of the ensuing season.

At Nama, on the western shore of the lake, in the Jadepore rajah's country, the salt is made on his sole account in the following manner:—The beach being rather flat, hard, and sandy, is left by the evaporation of the water, for about half or three-quarters of a mile in breadth, with a dry incrustation of salt, which is scraped up, washed and heaped as at Samber, where none is collected in this manner, as more laborious and less productive than the mode in use, as the bank is there so steep that not more than eight or ten feet is left dry. About sixty coss west of Samber (about 69 English miles) there is a village called Putchbudra, near an extensive plain. Here there are four or five hundred tanks, or salt-pans, similar to those at Samber, which, before the rainy season sets in, are filled with the Joassee plants, which grow in the neighbouring jungles to the height of four or five feet, and to the thickness of two or three inches near the root. These are left to be covered by the water which drains in from the plain during the rainy season. Two or three months after, when this water has evaporated to about one-third or more from the surface, about eighteen inches of fine salt is left, in which all but the stalks or the main stem of the Joassee is dissolved or incorporated. This is shovelled out to the depth of six or eight inches, when, becoming thinner from the water remaining, the rest is left to serve for seed, as it were, for reproduction the ensuing year. It is evidently left with such a design, as it is shortly after dried by the heat, and might be taken out with ease.

* "March 20, 1799, Ghazeepore;" is the date of our correspondent's information. Things are much altered in India since this time.

Never too late.—Some persons, whose minds have not been properly cultivated in early life, are in more advanced age discouraged from attempting to supply the defect by the notion that the susceptibility of culture is very much impaired, if not altogether lost, and the power of deriving pleasure from such sources infinitely less than in youth. No doubt the faculties have wasted for want of being employed; but it is equally certain that the period of life must be very advanced indeed at which they may not be quickened to use and polished to brightness; and, for the *enjoyment*, we shall quote Dugald Stewart, who, in one of his 'Essays,' says,—"In such men, what an accession is gained to their most refined pleasures! What enchantments are added to their most ordinary perceptions! The mind awakening, as if from a trance, to a new existence, becomes habituated to the most interesting aspects of life and nature—the intellectual eye is 'purged of its film'—and things the most familiar and unnoticed disclose charms invisible before. The same objects and events which were lately beheld with indifference, occupy now all the capacities and powers of the soul; the contrast between the present and the past serving only to enhance and to endear so unlooked-for an acquisition. What Gray has so finely said of the pleasures of vicissitude, conveys but a faint image of what is experienced by the man who, after having lost in vulgar occupation and vulgar amusements his earliest and most precious years, is thus introduced at last to a new heaven and a new earth:—

> 'The meanest floweret of the vale,
> The simplest note that swells the gale,
> The common sun, the air, the skies,
> To him are opening Paradise.'"

Effect of Chagrin.—Guarino Veroneso, ancestor of the author of the 'Pastor Fido,' having studied Greek at Constantinople, brought from thence on his return two cases of Greek manuscripts, the fruit of his indefatigable researches; one of these being lost at sea, on the shipwreck of the vessel, the chagrin at losing such a literary treasure, acquired by so much labour, had the effect of turning the hair of Guarino grey in one night.—*Sismondi.*

Snow Houses.—The winter habitations of the Esquimaux who visit Churchill are built of snow, and, judging from one constructed by Augustus to-day, they are very comfortable dwellings. Having selected a spot on the river where the snow was about two feet deep, and sufficiently compact, he commenced by tracing out a circle twelve feet in diameter. The snow in the interior of the circle was next divided with a broad knife, having a long handle, into slabs three feet long, six inches thick, and two deep, being the thickness to the layer of snow. These slabs were tenacious enough to admit of being moved about without breaking, or even losing the sharpness of their angles, and they had a slight degree of curvature corresponding with that of the circle from which they were cut. They were piled upon each other, exactly like courses of hewn stone, around the circle which was traced out, and care was taken to smooth the beds of the different courses with the knife, and to cut them so as to give the wall a slight inclination inwards. The dome was closed somewhat suddenly and flatly, by cutting the upper slabs in a wedge form, instead of the more rectangular shape of those below. The roof was about eight feet high, and the last aperture was shut up by a small conical piece. The whole was built from within, and each slab was cut so that it retained its position without requiring support until another was placed beside it, the lightness of the slabs greatly facilitating the operation. When the building was covered in, a little loose snow was thrown over it to close up every chink, and a low door was cut through the walls with the knife. A bed-place was next formed, and neatly faced up with slabs of snow, which was then covered with a thin layer of fine branches, to prevent them from being melted by the heat of the body. At each end of the bed a pillar of snow was erected to place a lamp upon, and lastly, a porch was built before the door, and a piece of clear ice was placed in an aperture cut in the wall for a window. The purity of the material of which the house was framed, the elegance of its construction, and the translucency of its walls, which transmitted a very pleasant light, gave it an appearance far superior to a marble building; and one might survey it with feelings somewhat akin to those produced by the contemplation of a Grecian temple raised by Phidias; both are temples of art, inimitable in their kinds.—*Franklin's Journey to the Polar Sea.*

SPADA.

Lionello Spada, one of the most celebrated painters of the school of Bologna, was born at that city, in the year 1576, in a very low condition of life. When a boy, he became the servant of the Caracci, and was employed to grind and prepare their colours. The constant opportunities he possessed, while with these eminent men, of seeing pictures and of hearing conversations on the principles of the art, called forth his ambition to become also a painter. This ambition was seen and encouraged by his masters, who gave him the benefit of their advice and instruction, and ultimately admitted him into their academy, where they had the satisfaction of seeing him become one of the most eminent of their disciples.

While Lionello was at the school of the Caracci, a certain Giovannino of Capugnano, having painted at his own village some pictures in fresco, in which the men were larger than the houses, the sheep larger than the men, and the birds larger still than the sheep, was so intoxicated with the applause which his performances obtained from the ignorant villagers, that he determined to go to Bologna,—which he considered as a theatre more worthy of his talents. On his arrival, he opened a school, and so far from acknowledging the immeasurable superiority of the Caracci, he had the impertinence to demand of them a pupil whom he might instruct. Spada, who seems to have loved a joke, offered himself, and for some time amused himself by copying the drawings of Giovannino, whom he treated with all the respect due to a master. But when he felt it time to put an end to this pleasantry, he left in the study a fine head of Lucretia, and suspended over the door some ironical verses on the pretender. This person complained bitterly of the ingratitude with which Spada had thus repaid the rapid progress he had made in painting under his instruction; and the Caracci, to cure the man's folly, were obliged to reveal the whole plot.

Having diligently studied in the school of his first masters, Spada proceeded to Rome, and attached himself to Caravaggio, whom he accompanied to Malta, and at last returned to Bologna the possessor of a new style, which may be characterized as a mean between the manner of the Caracci and that of Caravaggio. He is not equal to the greatest painters in the choice of forms; but his heads are full of sentiment, and his design is always correct, though not always noble. His principal works are the 'Miraculous Draught of Fishes,' in the refectory of St. Procolo at Bologna; and 'St. Dominic burning the Forbidden Books,' painted for the church of that saint in the same city. The last is considered as his greatest performance.

Our wood-cut is taken from the 'Musée Français,' and represents the 'Return of the Prodigal Son.' It is considered one of Spada's finest works. "My Father, I have sinned against heaven and against thee!" are the touching words we seem to hear in considering the picture. The colouring of the figure of the son is warm, natural, and full of vigour; the arm, countenance, and fore-shortening are designed and painted with perfect nature. The action of the father is simple and impressive; and the nearly closed eye expresses the tenderness of the old man, while his whole countenance exhibits compassion and love as strongly as that of his son does repentance and hope.

Spada was eventually called to the court of Parma by the Duke Ranuccio, who intrusted to him the charge of ornamenting the magnificent theatre which he had built in that city, and which at that time had no equal. The works which Spada then executed, whether at

Parma or Modena, were in a style completely different from those he had previously painted. It seemed to mingle the characteristics of the school of the Caracci with that of Parma. Perhaps the alteration is not an improvement; at any rate his best works were those painted at Bologna, although the liberal patronage of the Duke Ranuccio afforded him all the opportunity he could desire for the deliberate study and leisurely execution of his works. His happiness ended with the life of his patron; his talents seem then also to have perished, for all the works he afterwards executed are quite unworthy of him. Happily, perhaps, for his reputation, he did not long survive the duke, but died in the year 1622, in the forty-sixth year of his age.

['The Prodigal Son.]

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.
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